

CL2385USNA.ST25
SEQUENCE LISTING

<110> E.I. du Pont deNemours and Co., Inc.
Cheng, Qiong
Tao, Luan
Sedkova, Natalia

<120> GENES ENCODING CAROTENOID COMPOUNDS

<130> CL2385 US NA

<150> US 60/488,183

<151> 2003-07-17

<150> US 60/527,083

<151> 2003-12-03

<160> 22

<170> Patent in version 3.2

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 35 40 45
 Leu Ala Pro Gly Lys Arg Ile Arg Pro Val Leu Leu Met Leu Ala Ala
 50 55 60
 His Asp Leu Gly Tyr Arg Asp Glu Leu Ser Gly Leu Leu Asp Phe Ala
 65 70 75 80
 Cys Ala Val Glu Met Val His Ala Ala Ser Leu Ile Leu Asp Asp Ile
 85 90 95
 Pro Cys Met Asp Asp Ala Glu Leu Arg Arg Gly Arg Pro Thr Ile His
 100 105
 Arg Gln Phe Gly Glu Pro Val Ala Ile Leu Ala Ala Val Ala Leu Leu
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 Ser Arg Ala Phe Gly Val Ile Ala Leu Ala Asp Gly Ile Ser Ser Gln
 130 135 140
 Ala Lys Thr Gln Ala Val Ala Glu Leu Ser His Ser Val Gly Ile Gln
 145 150 155 160
 Gly Leu Val Gln Gly Gln Phe Leu Asp Leu Thr Glu Gly Gly Gln Pro
 165 170 175
 Arg Ser Ala Asp Ala Ile Gln Leu Thr Asn His Phe Lys Thr Ser Ala
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 195 200 205
 Leu Ala Ser Arg Glu Lys Leu His Arg Phe Ala Arg Asp Leu Gly Gln
 210 215 220
 Ala Phe Gln Leu Leu Asp Asp Leu Thr Asp Gly Gln Ser Asp Thr Gly
 225 230 235 240
 Lys Asp Ala His Gln Asp Val Gly Lys Ser Thr Leu Val Asn Met Leu
 245 250 255
 Gly Ser Lys Ala Val Glu Lys Arg Leu Arg Asp His Leu Arg Arg Ala
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Phe Thr His Cys Ala Leu Pro Glu Leu His Leu Asp Gln Ile Asp Leu
 35 40 45

CL2385USNA.ST25

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 Ser Met Thr Gly Gly Ala Ala Arg Ala Leu Ser Ile Asn His His Leu
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 85 90 95
 Arg Val Ala Leu Glu Ser Asp Asn Asp Ser Gly Leu Thr Arg Asp Leu
 100 105 110
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 115 120 125
 Gln Ile Leu Gly Glu Gln Gly Arg Arg Leu Ala Arg Asn Ala Val Ser
 130 135 140
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 Ala Leu Gln Arg Gly Gly Asp Arg Asp Trp Arg Gly Val Leu Gln Ala
 165 170 175
 Ile Ala Gln Leu Val Lys Ser Leu Glu Val Pro Val Val Val Lys Glu
 180 185 190
 Val Gly Ala Gly Ile Ser Ala Glu Val Ala Gln Arg Leu Ala Glu Ala
 195 200 205
 Gly Val Ser Met Ile Asp Ile Ala Gly Ala Gly Gly Thr Ser Trp Ala
 210 215 220
 Ala Val Glu Gly Glu Arg Ala Ser Thr Pro Gln Gln Arg Ala Val Ala
 225 230 235 240
 Met Ala Phe Ala Ser Trp Gly Ile Pro Thr Asp Glu Ala Leu Arg Ala
 245 250 255
 Val Arg Asp Arg Leu Pro Ala Ile Pro Leu Ile Ala Ser Gly Gly Ile
 260 265 270
 Arg Asp Gly Ile Asp Ala Ala Lys Ala Leu Arg Leu Gly Ala Asp Ile
 275 280 285
 Val Gly Gln Ala Ala Ala Val Leu Ser Ser Ala Leu His Ser Thr Asp
 290 295 300
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 35 40 45
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 Asp Arg Thr Leu Ala Leu Ala Ala His Pro Gly Gly Leu Gly Ile Leu
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 Leu Pro Glu Ala Leu Arg Ala Leu Ala Val Asp Gly Val Ile Val Asp
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 Gln Met Ala Pro Ala Gly Gly Leu Val Ala Glu Ala Leu Arg Leu Pro
 115 120 125
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 Glu Arg Phe Ala Ser Ser Glu Lys Ile Tyr Asp Trp Leu Met Arg Ser
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 180 185 190
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 195 200 205
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 210 215 220
 His Ala Thr Gly Pro Leu Arg Glu Pro Pro Ala Ala Ala Ala Pro
 225 230 235 240
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 260 265 270
 Arg Glu Leu Glu Ala Glu Leu Leu Ile Ala His Cys Gly Gly Leu Ser

275

280

285

Asp Phe Gln Ala Arg Lys Leu Leu Arg Ala Gly Ala Ala Gln Val Ala
 290 295 300
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 305 310 315 320
 Thr His Gly Gly Leu Asn Thr Val Leu Asp Ala Val Thr Tyr Gly Thr
 325 330 335
 Pro Leu Leu Ala Ile Pro Leu Ala Phe Asp Gln Pro Gly Ile Ala Ala
 340 345 350
 Arg Leu Ala His His Gly Leu Gly Met Arg Ala Ser Arg Phe Ser Thr
 355 360 365
 Ser His Gln Ile Ala Arg Arg Leu Arg Arg Leu Leu Asp Asp Gly Ala
 370 375 380
 Val Lys Gln Arg Met Thr Arg Leu Gln Pro Gln Leu Ala Ala Cys Gly
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CL2385USNA.ST25

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          20          25          30
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```
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Phe His Glu Glu Asp Leu Ser Ala Ala Gln His Gln Trp Ile Ala Pro
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CL2385USNA.ST25

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195 200 205

Leu Ala Thr Ala Gln Ala Arg Gln Asn Ile Cys Asp Tyr Ala Thr Arg
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Gln Gly Trp Gln Leu Glu Thr Leu Leu Arg Glu Glu Arg Gly Ala Leu
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245 250 255

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260 265 270

Ser Leu Pro Leu Ala Ala Thr Leu Ala Asp Ala Leu Ala Ala Glu Ala
275 280 285

Asp Phe Ser Pro Glu Ala Leu Ala Pro Arg Ile His Arg Phe Ala Gln
290 295 300

Ala Ala Trp Arg Lys Gln Gly Phe Phe Arg Met Leu Asn Arg Met Leu
305 310 315 320

Phe Leu Ala Ala Glu Gly Asp Arg Arg Trp Arg Val Met Gln Arg Phe
325 330 335

Tyr Gly Leu Pro Glu Gly Leu Ile Ala Arg Phe Tyr Ala Gly Arg Leu
340 345 350

Thr Leu Ala Asp Arg Ala Arg Ile Leu Ser Gly Lys Pro Pro Val Pro
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CL2385USNA.ST25

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20           25           30
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```
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35           40           45
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Thr Phe Asp Ala Gly Pro Thr Val Ile Thr Asp Pro Ser Ala Ile Glu
50           55           60
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CL2385USNA.ST25

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 85 90 95
 Phe Asn Tyr Asp Asn Asp Gln Ala Arg Leu Glu Ala Glu Ile Arg Lys
 100 105 110
 Phe Asn Pro Ala Asp Val Ala Gly Tyr Gln Arg Phe Leu Asp Tyr Ser
 115 120 125
 Arg Ala Val Phe Ala Glu Gly Tyr Leu Lys Leu Gly Thr Val Pro Phe
 130 135 140
 Leu Ser Phe Arg Asp Met Leu Arg Ala Ala Pro Gln Leu Ala Arg Leu
 145 150 155 160
 Gln Ala Trp Arg Ser Val Tyr Ser Lys Val Ala Ser Phe Ile Glu Asp
 165 170 175
 Asp Lys Leu Arg Gln Ala Phe Ser Phe His Ser Leu Leu Val Gly Gly
 180 185 190
 Asn Pro Phe Ala Thr Ser Ser Ile Tyr Thr Leu Ile His Ala Leu Glu
 195 200 205
 Arg Glu Trp Gly Val Trp Phe Pro Arg Gly Gly Thr Gly Ala Leu Val
 210 215 220
 Gln Gly Met Leu Lys Leu Phe Gln Asp Leu Gly Gly Thr Leu Glu Leu
 225 230 235 240
 Asn Ala Arg Val Ser His Ile Glu Ala Lys Glu Ala Ala Ile Ser Ala
 245 250 255
 Val His Leu Glu Asp Gly Arg Val Phe Glu Thr Arg Ala Val Ala Ser
 260 265 270
 Asn Ala Asp Val Val His Thr Tyr Gly Asp Leu Leu Gly Arg His Pro
 275 280 285
 Ala Ala Ala Ala Gln Ala Lys Lys Leu Lys Gly Lys Arg Met Ser Asn
 290 295 300
 Ser Leu Phe Val Leu Tyr Phe Gly Leu Asn His His His Asp Gln Leu
 305 310 315 320
 Ala His His Thr Val Cys Phe Gly Pro Arg Tyr Arg Glu Leu Ile Asp
 325 330 335

CL2385USNA.ST25

Glu Ile Phe Asn Arg Asp Gly Leu Ala Glu Asp Phe Ser Leu Tyr Leu
 340 345 350

His Ala Pro Cys Val Thr Asp Pro Ser Leu Ala Pro Pro Gly Cys Gly
 355 360 365

Ser Tyr Tyr Val Leu Ala Pro Val Pro His Leu Gly Thr Ala Asp Leu
 370 375 380

Asp Trp Asn Val Glu Gly Pro Arg Leu Arg Asp Arg Ile Phe Ala Tyr
 385 390 395 400

Leu Glu Glu His Tyr Met Pro Gly Leu Arg Ser Gln Leu Val Thr His
 405 410 415

Arg Ile Phe Thr Pro Phe Asp Phe Arg Asp Gln Leu Asn Ala Tyr Gln
 420 425 430

Gly Ser Ala Phe Ser Val Glu Pro Ile Leu Arg Gln Ser Ala Trp Phe
 435 440 445

Arg Pro His Asn Arg Asp Ser His Ile Arg Asn Leu Tyr Leu Val Gly
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Arg Arg Ser Val Leu Met Leu Tyr Ala Trp Cys Arg His Cys Asp Asp
35 40 45

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Val Ile Asp Asp Gln Gln Leu Gly Phe Pro Gly Glu Val Pro Ser Ala
50 55 60

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Gln Thr Pro Gln Gln Arg Leu Ala Asn Leu Glu Arg Lys Thr Arg Gln
65 70 75 80

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Ala Tyr Ala Gly Ala Gln Met His Glu Pro Ala Phe Ala Ala Phe Gln
85 90 95

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Glu Val Ala Ile Ala His Asp Ile Ser Pro Ala Tyr Ala Phe Asp His
100 105 110

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Leu Glu Gly Phe Ala Met Asp Val Arg Gly Ala Arg Tyr Glu Thr Phe
115 120 125

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Gln Asp Thr Leu Arg Tyr Cys Tyr His Val Ala Gly Val Val Gly Leu
130 135 140

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Met Met Ala Gln Ile Met Gly Val Arg Asp Glu Ala Val Leu Asp Arg
145 150 155 160

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Ala Cys Asp Leu Gly Leu Ala Phe Gln Leu Thr Asn Ile Ala Arg Asp
165 170 175

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Ile Val Glu Asp Ala Arg Val Gly Arg Cys Tyr Leu Pro Glu Ser Trp
180 185 190

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Leu Glu Glu Ala Gly Leu Asp Arg Leu His Phe Ala Asp Arg Ala His
Page 13

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195

200

205

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 210 215 220

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Met Glu Ile Thr Ala Ala Leu Ser His Lys Tyr Ile Met His Gly Trp
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